

IN THE CLAIMS:

1. (Currently Amended) A process of
  - (a) reducing the concentration of SO<sub>x</sub> in a SO<sub>x</sub>-containing gas,
  - (b) producing activated carbon from particulate petroleum coke,
  - (c) producing elemental sulphur from said SO<sub>x</sub>-containing gas, and
  - (d) producing heat of reaction in said process, wherein said process comprises treating said SO<sub>x</sub>-containing gas having at least 1% v/v SO<sub>x</sub> with an effective amount of said particulate petroleum coke at an effective SO<sub>x</sub> removal temperature of reduced to effect significant consumption of said petroleum coke and to produce
    - (i) a treated gas of reduced SO<sub>x</sub> concentration,
    - (ii) said activated carbon,
    - (iii) said elemental sulphur, and
    - (iv) said heat of reaction to produce a treated gas; and removing said treated gas.
2. (Original) A process as defined in claim 1 wherein said petroleum coke is a fluid coke.
3. (Currently Amended) A process as defined in claim 1 wherein said effective temperature is ~~selected~~ from 600° - 1000°C.
4. (Cancelled)
5. (Currently Amended) A process as defined in claim ~~[[4]]~~ 1 wherein said SO<sub>x</sub>-containing gas is a flue gas.
6. (Currently Amended) A process as defined in claim ~~[[4]]~~ 1 wherein said SO<sub>x</sub>-containing gas is a smelter gas.

7. (Original) A process as defined in claim 1 wherein said SOx-containing gas further comprises NOx species, and said effective SOx removal temperature is also a NOx species removal temperature.

Claims 8-9 (Cancelled)

10. (Currently Amended) A process for the production of activated carbon from particulate petroleum coke, said process comprising treating said petroleum coke with an effective amount of a SOx-containing gas at an effective temperature to effect reduction of said SOx concentration in said gas to produce a treated gas of reduced SOx concentration ~~as defined in claim 1~~ and said activated carbon ~~coke~~; and collecting said activated carbon ~~coke~~.

11. (Currently Amended) A process for the production of activated carbon and elemental sulphur from a SOx-containing gas and particulate petroleum coke, said process comprising treating said petroleum coke with an effective amount of a Sox-containing gas at an effective temperature to effect reduction of said Sox concentration in said gas to produce a treated gas of reduced Sox concentration ~~according to claim 1~~, said activated carbon and said elemental sulphur; and collecting said activated carbon and said elemental sulphur.

12. (Currently Amended) A process for recovering the heat of reaction in a process for reducing the concentration of SOx in a SOx-containing gas as defined in claim 1 ~~further~~ comprising:

(a) reacting a feed SOx-containing gas with a petroleum coke at an effective Sox-reducing temperature to produce an effluent gaseous mixture, at a temperature of greater than 600°C, comprising S and a reduced SOx concentration relative to said to said feed gas;

(b) passing said effluent gas to heat exchange means comprising a transfer fluid to effect heat transfer to said transfer fluid to produce a hotter transfer fluid and cool said effluent gas to a temperature below 200°C; and

(c) collecting said S and said hotter transfer fluid.

13. (New) A process as defined in claim 1 further comprising removing said treated gas of reduced SO<sub>x</sub> concentration.

14. (New) A process as defined in claim 1 further comprising removing said activated carbon.

15. (New) A process as defined in claim 1 further comprising removing said elemental sulphur.

16. (New) A process as defined in claim 1 further comprising removing said heat of reaction.

17. (New) A process as defined in claim 1 further comprising passing said treated gas containing said elemental sulphur to heat exchange means comprising a transfer fluid to (a) effect heat transfer of said heat of reaction to said transfer fluid and produce a hotter transfer fluid, and (b) cool said treated gas to a temperature below 200°C, to condense said sulphur and collecting said condensed sulphur and said hotter transfer fluid.

18. (New) A process as defined in claim 1 further comprising treating said activated carbon with a metal species-containing gas at a metal species adsorption temperature to effect adsorption of said metal species on said activated carbon, and production of a gas of reduced metal species concentration.

19. (New) A process as defined in claim 14 further comprising treating said removed activated carbon with a metal species-containing gas at a metal species adsorption temperature to effect adsorption of said metal species on said activated carbon, and production of a gas of reduced metal species concentration.

20. (New) A process as defined in claim 18 wherein said metal species-containing gas is said treated gas of reduced SO<sub>x</sub> concentration.
21. (New) A process as defined in claim 19 wherein said metal species-containing gas is said treated gas of reduced SO<sub>x</sub> concentration.
22. (New) A process as defined in claim 18 wherein said metal is mercury.
23. (New) A process as defined in claim 19 wherein said metal is mercury.
24. (New) A process as defined in claim 20 wherein said metal is mercury.
25. (New) A process as defined in claim 21 wherein said metal is mercury.